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## NEW *SOLENOCHILUS* SPECIES FROM THE CONEMAUGH SERIES OF EASTERN OHIO<sup>1</sup>

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### ABSTRACT

Three large nautiloid cephalopods have been collected from the Cambridge Limestone of the Conemaugh series at New Concord, Ohio. Unique size, morphology, and the appearance of transverse crenulations on the body chamber are significant in determining these specimens to represent a new species of the genus *Solenochilus*. Discovery of this new species in Ohio confirms the wide geographic distribution of large representatives of *Solenochilus* and may be significant in the study of paleoecological conditions.

### INTRODUCTION

In the spring of 1964, three fossil specimens of an unusually large nautiloid cephalopod were collected from the Cambridge Limestone of the Conemaugh Series at New Concord, Ohio. These specimens represent the genus *Solenochilus*

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and are unique in their size and the appearance of transverse crenulations on the body chamber. Although the shells are somewhat flattened, a systematic description has been prepared.

#### DESCRIPTION

##### *Solenochilus cambridgensis* sp. n.

The species is represented by three specimens, all of which are moderately complete internal molds representing a large part of the ventral portion of the outer whorl, including the adoral portion of the phragmocone and adjacent part of the body chamber. The shells are broadly flattened suggesting some dorsolateral compression during preservation. These shells are extremely large and subglobular and expand rapidly and regularly toward the aperture with a concave depression along the mid-ventral region.

Although the specimens are incomplete, the following measurements were determined:

Specimen	Holotype	Paratype A	Paratype B
Preserved length along venter	340.0 mm	356.5 mm	350.0 mm
Maximum width of body chamber	270.0 mm	263.0 mm	200.0 mm
Length of body chamber	270.0 mm	150.0 mm	185.0 mm
Length of preserved phragmocone	70.0 mm	206.0 mm	165.0 mm
Width of exposed adapical end	160.0 mm	127.0 mm	115.0 mm
Height of outer whorl	100.0 mm	68.0 mm	80.0 mm
Maximum width of ventral depressed zone	100.0 mm	60.0 mm	80.5 mm
Depth of ventral depressed zone	10.5 mm	3.0 mm	2.0 mm
Length of septal necks	Not visible	30.0 mm	25.0 mm
Width of siphuncle	19.0 mm	5.0 mm	5.0 mm

The sides of the venter converge sharply towards the umbilical region and appear somewhat convex. The ventral area, comprising the broadly rounded venter and flattened median zone, is separated from the dorsally converging umbilical area by abrupt, distinct, ventrolateral shoulders.

The whorls appear strongly but not completely involute and expand rapidly in size; the outermost whorl is completely dominant. The approximate height of the remaining whorls is 35 mm., but distortion and incompleteness make measurement somewhat uncertain.

The tests have been replaced by calcite, and a small amount of this substance still adheres to the internal mold. The test averages approximately 5 mm. in thickness and is thicker in the lateral areas than along the venter.

The preserved phragmocone of paratype A (Plate I, Fig. 3) is completely exfoliated and composed of seven to possibly eight camerae. The crowding of the septa adjacent to the living chamber indicates that this specimen was mature. The posterior camerae measure 27 mm. and the adoral one 10 mm., with length of camerae averaging 20 mm.

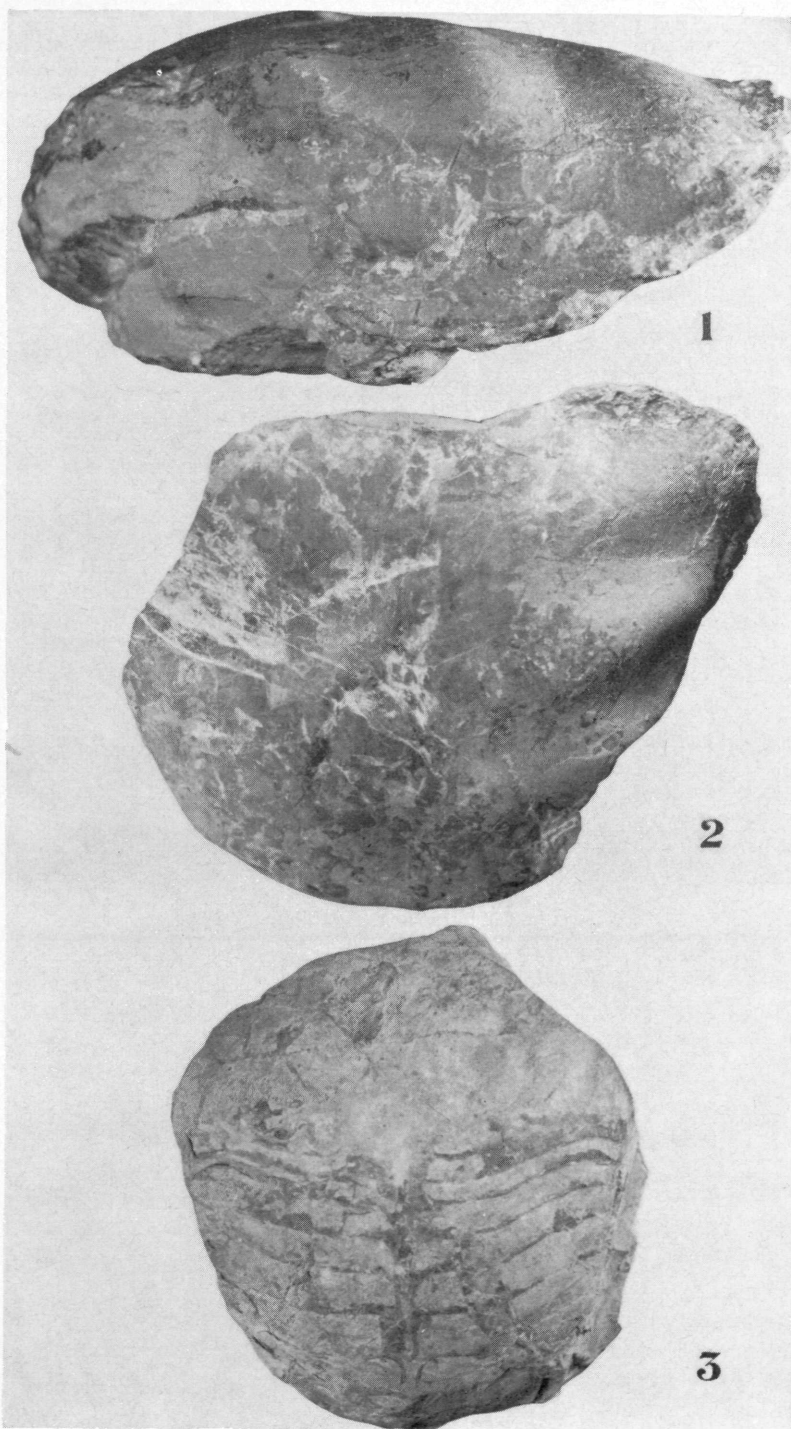
The sutures are transverse, broadly rounded, and inconspicuous, with a definite but shallow, broad median ventral lobe divided by a small median saddle and bordered by broadly rounded, shallow, lateral saddles. The course of the sutures across the lateral and dorsal sides of the shell cannot be determined.

The siphuncle is ventral and apparently was in contact with the ventral wall of the phragmocone. Septal necks are straight and cylindrical, extending apicad from the septum almost the length of the camerae. Details of the connecting rings are not preserved.

Because of crushing and incompleteness of the shell, the umbilicus is for the most part indistinguishable, but appears to have been small.

#### EXPLANATION OF FIGURES

FIGURES 1-3. *Solenochilus cambridgensis* sp. n. 1, 2—Holotype, side and ventral views showing crenulations in living chamber; 3—paratype A, ventral view of preserved portion of living chamber and phragmocone showing pattern of septa. All figures approximately  $\times 1\frac{1}{2}$ . New Concord, Ohio; from the Cambridge Limestone, Conemaugh Series, Westland Township, Guernsey County.



The most significant feature of the species is the appearance of several prominent crenulations on each side of the venter, sweeping broadly laterally orad (Plate 1, Figs. 1, 2). The maximum height of these ridges is over 10 mm. and a distance of 60 mm. separates crests of adjacent ridges. Although crenulations are visible on all specimens, the holotype exhibits these folds much more distinctly than do Paratypes A and B. Compression and possibly sexual dimorphism may have caused some of the variation among the three shells. Continuity and preciseness of pattern rules out the possibility that these are a result of compaction; they are apparently characteristic of the conch itself. Also, it is likely that these corrugations were created by an inner thickening of the shell; they appear to be features of mature shells.

#### REMARKS

These shells are comparable in size with *Solenochilus brammeri*, Miller, Dunbar, and Condra, from the Argentine Limestone of Nebraska, and in appearance with *Solenochilus greenensis*, Sturgeon, from the Hamden Limestone near New Philadelphia, Ohio, but are distinguished by the wrinkled body chamber (Plate 1, Figs. 1-2). The holotype of *Solenochilus brammeri* and hypotype of *Solenochilus greenensis* have been unavailable for comparison, but excellent descriptions and illustrations, in Miller, Dunbar and Condra (1933, p. 234-236, pl. 23-24) and Sturgeon and Miller (1948, p. 78-79, pl. 19), have made comparison and generic identification possible.

The morphology of the species represented is similar, although compaction has produced some compression in the specimens under study. Discovery of the new species in Ohio confirms the wide geographic distribution of large representatives of *Solenochilus*, which may be a significant factor in stratigraphic correlation and the determination of environmental conditions. Attempts are being made at this time to locate additional specimens so that a more precise analogy might be attained.

#### OCCURENCE

These specimens were collected from the Cambridge limestone of the Cone-maugh Series in the John Gress and Sons Quarry, one mile east of New Concord on Route 40 in Westland Township, Guernsey County, Ohio. They were donated by Mr. Randy Bates and the Gress Limestone Company.

#### ACKNOWLEDGMENTS

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#### REPOSITORY

Orton Museum, Department of Geology, The Ohio State University, Columbus, Ohio, Holotype OSU 26788, Paratype A OSU 26789, Paratype B OSU 26790.

#### LITERATURE CITED

- Miller, A. K., C. O. Dunbar and G. E. Condra. 1933. The Nautiloid cephalopods of the Pennsylvanian system in the midcontinent region. Nebraska Geol. Survey, ser 2, Bull. 9. 240 p.
- Sturgeon, M. T. and A. K. Miller. 1948. Some additional cephalopods from the Pennsylvanian of Ohio. Jour. Paleontology 22: 75-80.